

Amendments to the Drawings

New Figure 17 has been added to illustrate the limitations of claims 9 and 29.

Attachment: New Drawing Sheet

REMARKS

In response to the Office Action mailed September 15, 2005, Applicants respectfully request reconsideration. Claims 1-46 were previously pending in this application. Claims 1, 7, 17, 21, 27, 37-39, 41, and 42 have been amended. No claims have been canceled and no new claims have been added. As a result, claims 1-46 are pending for examination with claims 1, 17, 20, 21, 37, 40, 41, 42, 43, 44, 45, and 46 being independent. The application is believed to be in condition for allowance.

Allowable Subject Matter

Applicants note with appreciation the indication of allowable subject matter in claims 11, 13, 16, 18, 20, 31, 33, 36, 38, 40, and 43-46.

Objections to the Drawings

The Office Action objects to the drawings for not showing every feature of the invention specified in the claims. Specifically, the Office Action asserts "an electromagnetic radiation focusing device positioned between the electromagnetic radiation source and the array of electromagnetic radiation sensors," as recited in claims 9 and 29, must be shown in the drawings.

A new Figure 17 has been added to illustrate an electromagnetic radiation focusing device positioned between the electromagnetic radiation source and the array of electromagnetic radiation sensors. Accordingly, withdrawal of this objection is respectfully requested.

Rejections Under 35 U.S.C § 112

The Office Action rejects claims 37 and 39 as being indefinite for failing to particularly point out and distinctly claim the subject matter which Applicants regards as the invention. Claims 37 and 39 have been amended as the Office Action had suggested.

Accordingly, withdrawal of this rejection is respectfully requested.

Rejections Under 35 U.S.C § 102

The Office Action rejects claims 1, 2, 4-8, 12, 14, 15, 17, 19, 21, 22, 24-28, 32, 34, 35, 37, 39, 41, and 42 under 35 U.S.C § 102(b) as being anticipated by Tull et al., U.S. Patent No. 5,361,854 (Tull). Applicants respectfully traverse this rejection.

Tull illustrates a laser positioning and measuring system for an earth boring apparatus, wherein the position of a pipe casing is measured as it is pushed and steered through the earth so that a more accurate line and grade of the bore may be had (Col. 1, lines 6-13). As illustrated in Figure 2, in operation, the measuring units (110, 112, and 114) collectively measure the position of end target measuring unit 118 with respect to home target measuring unit 116 *in terms of X, Y, and Z coordinates* (Col. 6, lines 47-53). Forward beams 88a-d are used to calculate an X, Y position of each measuring unit with respect to an adjacent measuring unit (Col. 6, lines 49-63). Reverse laser beams 90b-d are used to calculate an angle measurement of each measuring unit with respect to an adjacent measuring unit (Col. 6, line 64 – Col. 7, line 9). Data produced from both forward and reverse beams is used to *calculate the X, Y, Z position of the target 118 with respect to home measuring unit 116* (Col. 7, lines 9-12). Thus, data is computed in the Tull system to determine a final output of an *X, Y, Z position*.

Amended claim 1 requires “a processor processing the responses of the sensors to determine *a twist of the object*.” Applicants respectfully assert that Tull does not teach or suggest determining *a twist of the object*, as recited in claim 1. The angular measurement of Tull is an angular measurement between the axes of two adjacent measuring units. Such is not a measurement of angular orientation which results from twist. Furthermore, Tull teaches taking an angular measurement in order to calculate the *X, Y, Z position* of a target measuring unit with respect to a home measuring unit (Col. 7, lines 9-12). There is no determination of twist in the Tull system. Thus claim 1 is patentably distinct from Tull.

Claims 2-10, 12, 12, and 15 depend from claim 1 and patentably distinguish from Tull for at least the same reasons.

Claim 17, from which claim 19 depends, claim 21, from claims 22-31, 32, and 35 depend, claim 37, from which claim 39 depends, claim 41, and claim 42 have been amended in a similar fashion and therefore are patentably distinct from Tull for at least the same reasons. Accordingly, withdrawal of these rejections are respectfully requested.

Rejections Under 35 U.S.C § 103

The Office Action rejects , under 35 U.S.C § 103(a), claims 2 and 23 as being unpatentable over Tull in view of Stirland et al., U.S. Patent No. 3,723,013; claims 9 and 29 over Tull in view of Toshio, Publication No. JP 60006811; and claims 10 and 30 over Tull in view of Pund, U.S. Patent No. 5,592,285. Applicants respectfully traverse this rejection.

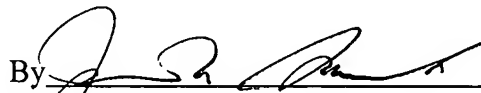
As should be appreciated from the above discussion relating to Rejections Under 35 U.S.C § 102, claims 2, 9, and 10 and claims 23, 29, and 30 depend from claims 1 and 21, respectively, and are therefore patentably distinct from the prior art of record for at least the same reasons. Accordingly, withdrawal of this rejection is respectfully requested.

CONCLUSION

In view of the above amendments and remarks, it is believed that all claims are in condition for allowance, and it is respectfully requested that the application be passed to issue. If the Examiner feels that a telephone conference would expedite prosecution of this case, the Examiner is invited to call the undersigned.

Respectfully submitted,

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